

On *Pecten (Amusium) condoni* HERTLEIN  
from the West Coast of North America<sup>1</sup>

BY

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(1 Plate)

## INTRODUCTION

AMONG THE TERTIARY PECTINIDAE of the west coast of North America *Pecten (Amusium) condoni* HERTLEIN is potentially of significance in interregional correlation because of its limited geological range and close affinity to certain fossil pectinids of northern Japan.

*Pecten (Amusium) condoni* was first described by HERTLEIN (1925) based upon specimens from the Montesano Formation of FOWLER (1965) of western Washington. However, as pointed out by GRANT & GALE (1931), its interior characteristics which are considered to be most definitive for reference to *Amusium* have remained unknown. Thus, the subgeneric classification of this species has remained uncertain. The fact that *Amusium* is now restricted to low-latitude, tropical or subtropical areas in the Pacific casts some doubt on the initial subgeneric assignment of this species as it occurs in an assemblage of cool temperate aspect. Moreover, all of the other Tertiary records of *Amusium* or *Amusium*-like pectinids from the middle latitudes of the marginal eastern North Pacific are in warm-water assemblages of pre-late Miocene age that occur no farther north than central California.

Numerous specimens preserved in the Department of Geology of Stanford University and at the U. S. Geological Survey in Menlo Park, California, were studied by the writers. Examination of these specimens has led the writers to consider this species to be referable to the genus *Yabepecten* MASUDA, 1963, based upon *Pecten tokunagai*

YOKOYAMA, 1911, from Japan. Accordingly, this is the first recognition of the occurrence of the genus in the eastern North Pacific. This article includes a redescription of this species based upon the holotype, topotypes, and other specimens from the Montesano Formation and a discussion of its relationship with other species from the northern Pacific region.

## PECTINIDAE

## Pectininae

*Yabepecten* MASUDA, 1963*Yabepecten condoni* (HERTLEIN, 1925)

(Figures 1, 3 to 9)

1925. *Pecten (Amusium) condoni* HERTLEIN. Southern California Acad. Sci. Bull., 24 (2) : 41; pl. 4, figs. 8, 9

1931. *Pecten (Amusium) condoni* HERTLEIN. GRANT & GALE, San Diego Soc. Nat. Hist. Mem. 1: 232

1967. ?*Miyagipecten alaskensis* MACNEIL. U. S. Geol. Survey Prof. Paper 553: 45; pl. 6, figs. 4, 5

**Type Specimen:** Stanford University Type Coll. No. 15.

**Description:** The following description is based upon specimens preserved in the collections of Stanford University and of the U. S. Geological Survey, Menlo Park, California.

Shell medium in size, rather thin, smooth, compressed, nearly orbicular in outline, equilateral except for auricles,

<sup>1</sup> Publication authorized by the Director, U. S. Geological Survey

subequivalve; valves radiately ribbed and forming an angle of about  $100^\circ$  at apex.

Right valve with 20 to 25 faint, low, flatly rounded, inconspicuous radial ribs crossed by fine concentric growth lines; radial ribs obscure near beak but tending to become more distinct towards ventral margin, much broader than their very shallow interspaces, rarely divided into two unequal riblets by shallow furrow; auricles medium in size, subequal, anterior one with wide and shallow byssal notch, a few faint, fine radial threads and concentric lines; posterior auricle truncated behind at obtuse angle and with concentric lines; interior surface smooth. Left valve with fine, low radial ribs, fine concentric growth lines and a fine microsculpture network; radial ribs much narrower than their shallow interspaces, somewhat distinct at upper part but tending to become somewhat broader and more obscure towards ventral margin.

Hinge with simple cardinal crura, wide and shallow resilial pit with rather distinct lateral ridges in right valve and auricular crurae which terminate distally in an obscure rounded oblong denticle.

Remarks: These morphological characters indicate that this species should be assigned to the genus *Yabepecten*.

*Yabepecten condoni* is closely related to *Y. tokunagai* (YOKOYAMA) (Figure 2) from the early Pliocene of northern Japan (MASUDA, 1962, 1963). The right valve can usually be distinguished from *Y. tokunagai* by its radial ribs, which are always broader than their interspaces; the left valve differs in being moderately inflated. Nevertheless, the right valves of these species are sometimes rather difficult to distinguish from each other.

*Miyagipecten saromensis* HASIMOTO & KANNO, 1958, from the Miocene Chirai Formation of Hokkaido, Japan, also resembles *Yabepecten condoni*, but it can be distinguished by the smaller number of radial ribs on the right valve, which are also less distinct, and by the rather

distinct ribs provided with intercalary threads on the left valve.

*Miyagipecten alaskensis* MACNEIL, 1967, an early Pliocene species from the upper Yakataga Formation, Malaspina District, Alaska, is doubtfully included with the present species, as indicated by a comparison with the type specimens, both of which are very poorly preserved and fragmental.

Type Locality: Loc. No. 148 (Stanford University, NP 244) at dam No. 35, west fork of the Wishkah River, Grays Harbor County, Washington ( $SE\frac{1}{4}NW\frac{1}{4}$  sec. 35, T. 21 N., R. 7 W.). Upper part of the lower member of the Montesano Formation of FOWLER (1965). Early Pliocene (?).

Age of the Montesano Formation of Fowler (1965): The age and correlation of the Montesano Formation of FOWLER (1965), in terms of the Pacific coast mega-invertebrate chronology (WEAVER *et al.*, 1944), is doubtful because no definitive biostratigraphic study of the formation has ever been made. Although specialists in larger invertebrates include the lowermost part in the late Miocene, they place the bulk of the formation in the early Pliocene because of faunal similarity with the early Pliocene Empire Formation of coastal Oregon (WEAVER, 1945; YOUNGQUIST, 1961; ADDICOTT, 1966). Preliminary study of extensive collections from the Montesano Formation made by Gerald A. Fowler suggests that there is, indeed, a faunal change between assemblages from near the base of the formation and those from stratigraphically higher parts. This change seems to occur stratigraphically below the *Yabepecten* localities, and for this reason these localities are here tentatively considered to be of early Pliocene age. It is noteworthy that the most recent studies of benthonic Foraminifera from the Montesano Formation (FOWLER, 1965; RAU, 1967) have considered the

### Plate Explanation

(All figures natural size)

Figure 1. *Yabepecten condoni* (HERTLEIN). Right valve, USNM No. 646455. USGS loc. M3039. Montesano Formation, Pliocene.

Figure 2. *Yabepecten tokunagai* (YOKOYAMA). Right valve, USNM No. 646456. Hamada Formation, Pliocene. Aomori Prefecture, Northern Japan.

Figure 3. *Yabepecten condoni* (HERTLEIN). Right valve, SUPTC No. 22340. Stanford Univ. loc. NP244. Montesano Formation, Pliocene.

Figure 4. *Yabepecten condoni* (HERTLEIN). Left valve, SUPTC No. 22340. Stanford Univ. loc. NP244. Montesano Formation, Pliocene.

Figure 5. *Yabepecten condoni* (HERTLEIN). Right valve, USNM No. 646457. USGS loc. M2991. Montesano Formation, Pliocene.

Figure 6. *Yabepecten condoni* (HERTLEIN). Right valve, SUPTC No. 22340. Stanford Univ. loc. NP249. Montesano Formation, Pliocene.

Figure 7. *Yabepecten condoni* (HERTLEIN). Hinge area of left valve, USNM No. 646458. USGS loc. M3039. Montesano Formation, Pliocene.

Figure 8. *Yabepecten condoni* (HERTLEIN). Right valve, USNM No. 646459. USGS loc. M2991. Montesano Formation, Pliocene.

Figure 9. *Yabepecten condoni* (HERTLEIN). Left valve, USNM No. 646460. USGS loc. M2991. Montesano Formation, Pliocene.



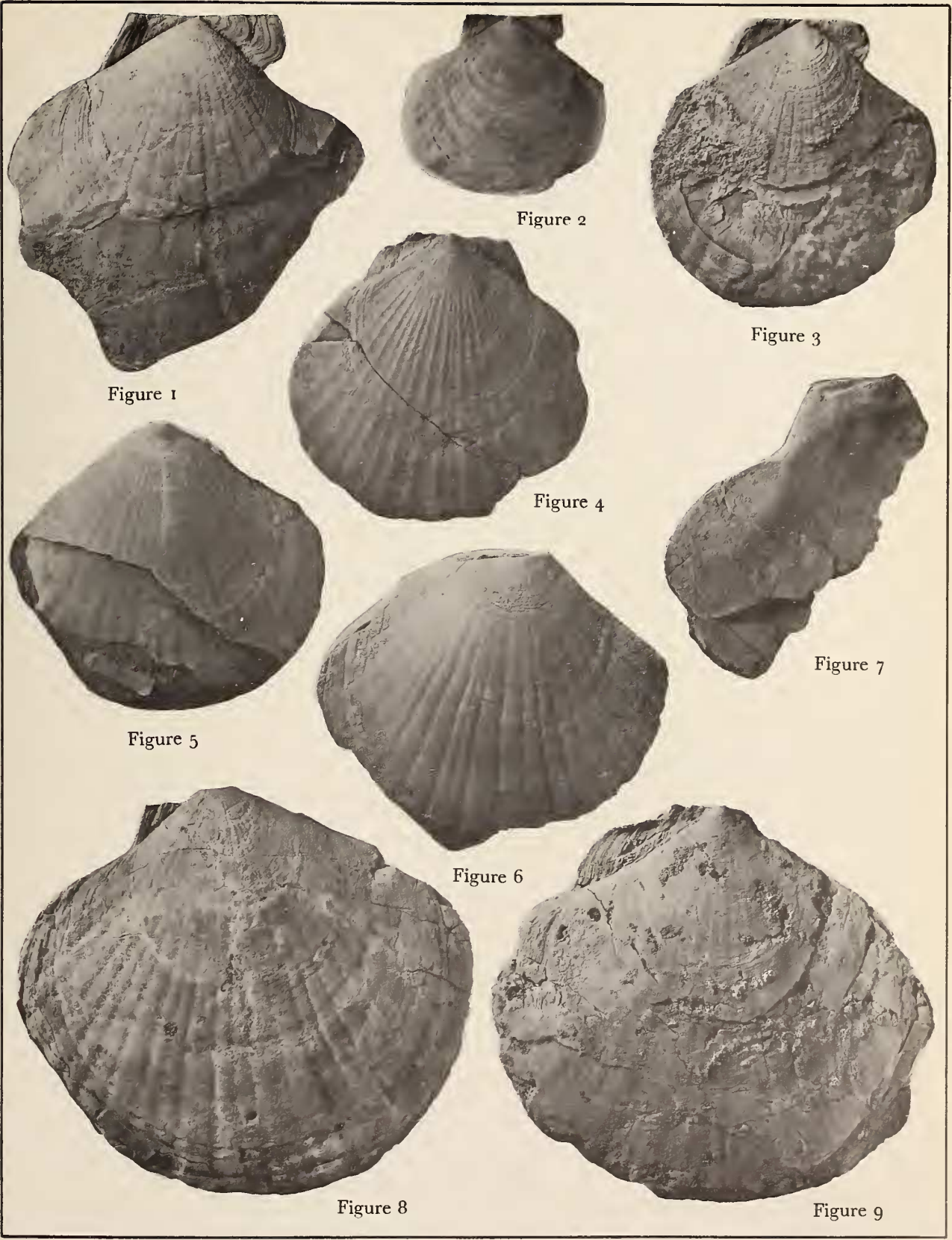


Figure 1

Figure 2

Figure 3

Figure 4

Figure 7

Figure 5

Figure 6

Figure 8

Figure 9

